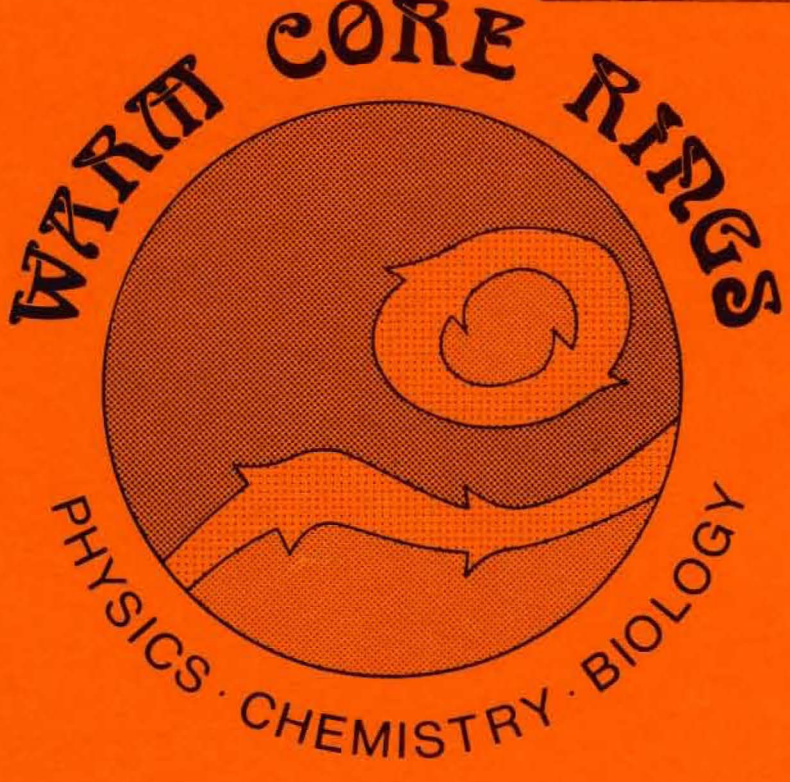


# A BIBLIOGRAPHY OF PHYSICAL, CHEMICAL, and BIOLOGICAL STUDIES OF RINGS IN THE WORLD'S OCEANS



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# A BIBLIOGRAPHY OF PHYSICAL, CHEMICAL, AND BIOLOGICAL STUDIES OF RINGS IN THE WORLD'S OCEANS

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# INTRODUCTION

This bibliography marks the end of several years of sporadic attempts to put together a set of references on rings. The scope of the effort encompasses the chemistry, biology, and physics of the long-lived, coherent features which are commonly referred to as rings after Fuglister (1972). There is a vast literature on the mesoscale eddy field in different parts of the world. The present set of references includes a subset of this body of work.

The basic criterion used in the compilation of this bibliography is fairly narrow compared to the range of eddies found in the world's oceans. The emphasis here is on the highly nonlinear features formed due to the instability processes in boundary currents and in the planetary scale jet which surrounds the Antarctic. The nomenclature "ring", refers to the strong encircling current which forms a kinematic trap in which the core of the ring is embedded. In the past few years several new classes of features have been discovered which carry fluid within their structure for extended periods of time. The importance of this transport property was first recognized in rings over a decade ago. The anomalous core properties of these eddies makes them of considerable interest to a wide range of the oceanographic community from the viewpoint of a transport mechanism and as a site in which to carry out process experiments. The papers below have been cataloged by geographic area (North Atlantic, Australian, etc.), under models, or as background necessary for understanding the influence that rings may have on their environment.

As is the case with most classifications, the ones used here to limit the scope of the references are in many respects arbitrary. The selection process is made even more restrictive due to the immediate interests of the authors and the intended primary audience which is the warm core rings group and others working on rings in the North Atlantic. For example, the background material is for the North Atlantic. The extensive studies of the general mesoscale field in the absence of rings, undertaken by MODE and POLYMODE are excluded here for the most part, although much of this work can be traced by considering the literature cited in the references below. Finally this list is badly obsolete even as it is printed due to the incredible rate at which new papers on the subject are appearing in print. The last articles included here are those which were available in the early summer of 1982. This leaves out a number of excellent papers which have since appeared.

The authors would like to thank the many people without whom this publication would never have been finished. A large number of people contributed references and helped correct those that had already found their way to the list. In particular, credit is due to D. Kester, D. Vastano, P. Richardson, and G. Flierl who contributed to the first attempt at compiling such a document during the cold core ring experiment in the late 1970's. The task of obtaining and sorting out the literature on rings off Australia and Japan was enchanced by the efforts of

S. Brandt, G. Cresswell, and A. Tomosada. Many of the investigators in the current warm core ring experiment provided various citations. As usual, this work would not have seen the light of day if it had not been for the hours of hard work put in over a xerox machine and word processor. Mary Jane Lyons (WHOI) spent the time to enter these references into a word processor and then slaved through the many revisions. L. Robbins, J. Green and G. Ingram spent a considerable amount of time xeroxing and typing preliminary lists at Miami.

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